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Information Science and Technology Center Seminar Series

Hugh Chipman
Acadia University

"Discovery and Prediction in Email Networks via Statistical Modelling"

Wednesday, January 26, 2011
3:00 - 4:00 PM
TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: Network data arise in a wide variety of contexts including biology, computers, social interactions and email communication. Social networks often focus on network data consisting of a collection of objects (e.g. people) and relations (e.g. friendship) between them. The objects are referred to as nodes and relations are called edges. Community discovery in social networks is a challenging problem given the sparse and dynamic nature of these networks. Link prediction (prediction of an edge) is another fundamental problem. Recently, a mixed membership stochastic block model (Airoldi et. al. 2008) has been proposed to simultaneously identify communities and predict edges for binary relational data. The method is limited to data with single pairwise relations between objects. In some transactional networks such as email networks, multiple transactions (e.g. multiple emails) and one-to-many relations (e.g. one sender and multiple recipients) are present. This talk will introduce extensions for such networks. The model provides potential extensions to a dynamic version allowing for modeling birth/death of groups and change in the activity levels of the existing groups. Illustrative examples will include the Enron email dataset and data from reddit.com <http://reddit.com> .

Biography: Hugh Chipman has been a tier-II Canada Research Chair in Acadia University's Department of Mathematics and Statistics since 2004. Prior to that he was at the University of Waterloo and the University of Chicago. His graduate degrees are from the University of Waterloo. His research interests include Bayesian methods, applications, social network models, data mining and statistical learning. He is currently Editor for Technometrics. He is a ASA felllow, and received the CRM-SSC award in 2009.

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